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EXAMINER	
WRIGHT, PATRICIA KATHRYN	
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1797	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/748,389	YAMAKAWA ET AL.	
	Examiner	Art Unit	
	P. Kathryn Wright	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 January 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,10-22,31-40 and 55-69* is/are pending in the application.

4a) Of the above claim(s) *55,58-60,63 and 67* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,10-22,31-40,56-57,61,62,64-66,68 and 69* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of the Claims

1. This action is in response to papers filed January 09, 2009 in which claims 1, 22, were amended and claims 67-69 were added. The amendments have been thoroughly reviewed and entered. Any objection/ rejection not repeated herein have been withdrawn.

Applicant's arguments have been thoroughly reviewed but are deemed moot in view of the amendments, withdrawn rejections, and new grounds for rejection. New grounds for rejection, necessitated by the amendments, are discussed.

Election/Restrictions

2. Newly submitted claim 67 is directed to an invention that is distinct from the invention originally claimed because the previously examined claims 1 and 22 recite a porous membrane comprising a porous-silicon membrane whereas new claim 67 recites a porous membrane comprising an uncoated semiconducting porous-silicon membrane. In other words, the inventions differ by materially different porous membranes. Thus, the inventions listed in this action are distinct for the reasons given above and there would be a serious search and examination burden if restriction were not required because the following reasons apply:

(a) the inventions require a different field of search (for example, searching different classes/subclasses or electronic resources, or employing different search queries);

(b) the prior art applicable to one invention would not likely be applicable to another invention; and

(c) the inventions are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 67 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1, 10-22, 31-40, 56-57, 61-62, 64-66 and 68-69 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1 and 22 now recite, *inter alia*, a porous membrane comprising a porous-silicon membrane, wherein the porous membrane comprises a material that is capable of exhibiting a change in an optical and an electrical characteristic. Thus, it appears applicant may be claiming a porous silicon membrane that includes an additional material capable of exhibiting a change in both an optical and electrical characteristic. However, the specification states at paragraph [0039], "... the porous membrane may be manufactured to produce a changed optical and/or electrical characteristic in response to exposed to a targeted fluid or reagent, either though the use of a base substrate

(*e.g.*, PSi or PPSi) or through the addition of a sensor layer or through chemical doping and the like." (Emphasis added.) In other words, the original specification does not support a porous membrane comprising both a porous silicon membrane and an additional material for exhibiting a change in both an optical and electrical characteristic. This is considered new matter.

New claims 68-69 recite the porous membrane is uncoated. This negative limitation is not supported in the specification and contradict the recitation of the porous membrane comprising a material, as recited in claims 1 and 22. Nor has Applicant cited where in the specification this new limitation finds support. This is also considered new matter.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1, 10-22, 31-40, 56-57, 61-62, 64-66 and 68-69 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 22 now recite *inter alia*, a porous membrane comprising a porous-silicon membrane, wherein the porous membrane comprises a material that is capable of exhibiting a change in an optical and an electrical characteristic. It is not clear whether applicant is trying to claim a porous silicon membrane that includes an additional material or the porous membrane comprising a porous silicon membrane alone. The specification fails to clarify the matter. For the purposes of examination, the porous membrane has been interpreted as comprising a porous silicon membrane material.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claims 1 and 22 recite the broad recitation "a material which is capable of exhibiting...", and the claim also recites "porous silicon membrane" which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1, 10-15, 17-22, 31-36, 38-40, 56, 58, 61, 64-66 and 68-69 are rejected under 35 U.S.C. 102(e) as being anticipated by Barth et al., (US Patent Pub. No. 2005/0014162), hereinafter "Barth".

As to claims 1 and 22, Barth teaches a microfluidic device, comprising:

a substrate (402 part of larger silicon wafer), the substrate including

a source fluid flow channel (2 in Figs. 2-3 and 414' in Fig. 4E);

a target fluid flow channel (13 in Figs. 2-3 and 406' in Fig. 4E), the target fluid flow channel being in fluid communication with the source fluid flow channel at a cross-channel area, wherein the source fluid flow channel crosses over the target fluid flow channel in an X fashion at the cross-channel area;

a porous membrane (8 in Figs. 2-3 and 408 in Fig. 4E) separating the source fluid flow channel from the target fluid flow channel in the cross-channel area, wherein the porous membrane comprises a porous-silicon membrane (see paragraph [0040]), the membrane having at least one nanopore 3, 410, 410'; and

a field-force/gradient mechanism (electrodes 6, 6', 9, 11' and voltage source 11, 11', 11'') proximate the porous membrane, wherein the field- force/gradient mechanism comprises an electric field configured to produce a fluid movement of a fluid from the source fluid flow channel to the target fluid flow channel via the porous membrane located in the cross-channel area.

As to claims 10 and 31, Barth teaches a light source and a detector (microscopic optical tracking), the light source and the detector being focused at the cross-channel area (see paragraph [0044] et seq.).

Regarding claims 11 and 32, wherein the thickness of the porous membrane is between 0.01 and 50 micrometers, that is Barth teaches 1 nm to 2 mm (see paragraph [0027]).

As to claims 12 and 33, the porous membrane of Barth is capable of fractionating molecules based on size, molecular weight, charges, chemical affinity or other chemical/physical properties (see entire document).

As to claims 13 and 34, Barth teaches wherein the porous membrane is made of a single crystal porous silicon (PSi), see paragraph [0040].

With respect to claims 14 and 35, Barth teaches the porous membrane is made of a porous polysilicon (PPSi), see paragraph [0040].

Regarding claim 15, the source fluid flow channel and the target fluid flow channel being formed in the substrate (see embodiment of Fig. 4E).

With respect to claims 17 and 36, the substrate can be made of silicon (i.e., silicon chip which is part of a larger silicon wafer), see paragraph [0054].

As to claims 18 and 38, wherein the porous membrane is integral with the substrate (see embodiments of Figs. 3B-C and Fig. 4E).

Regarding claims 19-20 and 39-40, note that the recited use of the device (disposable or reuse), is not considered as part of the claimed device structure and is therefore not given patentable weight. Apparatus claims must be structurally distinguishable from the prior art in terms of structure, not function. (see MPEP § 2114 & § 2173.05(g)).

With respect to 21, Barth shows the source fluid flow channel and the target fluid flow channel intersect at a 90 degree angle at the cross-channel area (see Figs. 2-3D).

As to claims 56 and 61, the source fluid flow channel can be within the upper substrate member and the target fluid flow channel can be within the lower substrate member or *vice-versa*.

Regarding claims 68-69, Barth does teaches the porous silicon membrane is uncoated (see entire document).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 16, 37, 57 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barth (US Patent Pub. No. 2005/0014162) in view of US Patent Pub. No. 2003/0136679 to Bohn et al., (hereinafter “Bohn”)

The teachings of Barth have been summarized previously above. While Barth does teach a silicon substrate, Barth does not teach the substrate is made of polydimethyl siloxane (PDMS). However, the use of polydimethyl siloxane substrates in the microfluidic art is considered conventional, see for example Bohn.

Bohn teaches a microfluidic device 20 comprising a source fluid flow channel 28 formed in lower substrate 24 and a target fluid flow channel 30 formed in the upper substrate 26. Note that the source fluid channel could be disposed in upper substrate and the target fluid could be disposed in the lower substrate and the device would function the same. The target fluid flow channel is in fluid communication with the source fluid flow channel at a cross-channel area. As shown in Fig. 1, the source fluid flow channel 28 crosses over the target fluid flow channel 30 in an "X fashion" at the cross-channel area (i.e., perpendicular, see paragraph [0039]; claim 21). Bohn also teaches the substrates 24, 26 made of silicon or polydimethyl siloxane (PDMS), see paragraphs [0025], [0039].

Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to have substituted the silicon substrate of Barth with one made of polydimethyl siloxane since Bohn recognizes them as equivalents. Furthermore, it would have been obvious to one of ordinary skill in the art to determine the optimum materials of construction based on considerations such as cost, ease of manufacture, reactions with the processing agents, and/or maintaining the required reaction conditions with respect to temperature.

As to claim 57, Barth and Bohn do not teach the membrane being located in a hollow space formed by the first and second cavities or recessing in the upper and lower substrates. However, it would have been obvious to one ordinary skill in the art

at the time of the claimed invention to form a first cavity and second cavity in the upper and lower substrate so that the membrane is located in a hollow space (recess) created by the first and second cavities in the upper and lower substrate, since the hollow cavities in the upper and lower substrates would help hold the nanoporous membrane in place for subsequent handling and prevent wrinkling or deforming the membrane.

13. Claims 1, 10-22, 31-40, 56-57, 61-62, and 64-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Pub. No. 2003/0136679 to Bohn in view of US Patent Pub No. 2003/0148524 to Zimmermann et al., (hereinafter "Zimmermann").

As discussed above, Bohn teaches a microfluidic device 20 comprising a source fluid flow channel 28 formed in lower substrate 24 and a target fluid flow channel 30 formed in the upper substrate 26. Note that the source fluid channel could be disposed in upper substrate and the target fluid could be disposed in the lower substrate and the device would function the same. The target fluid flow channel is in fluid communication with the source fluid flow channel at a cross-channel area. As shown in Fig. 1, the source fluid flow channel 28 crosses over the target fluid flow channel 30 in an "X fashion" at the cross-channel area (i.e., perpendicular, see paragraph [0039]; claim 21).

The Bohn device also includes a porous membrane 22 integral with the substrates 24, 26 (claim 18) and separating the source fluid flow channel from the target fluid flow channel in the cross-channel area. The porous membrane 22 is a sensor exhibiting sensing characteristics causing a change in an electrical characteristic in response to exposure to a targeted fluid or reaction. That is, Bohn teaches the interior surface 60 of each pore 42 may be coated with a coating 62 (see

Fig. 3), so that molecules passing through the pore are likely to contact coating. For example, the pores 42 may be coated with a particular reagent causing a reaction. Bohn teaches the coating 62 may be electrically charged or metal (gold) which would cause a potential change in an optical and/or electrical characteristic of the porous membrane 20 (see paragraph [0028]). Note gold is a conductor that can be used for electronics and photovoltaic applications. Also note that the present invention teaches a membrane using integrated metals (see paragraph [0041]).

Thus, like the present invention, the porous membrane of Bohn is manufactured to produce a changed optical and/or electrical characteristic through the addition of a sensor layer (i.e., coating 62).

Bohn also teaches a field-force/gradient mechanism 50 proximate the porous membrane (see Figs. 1, 4-5c). The field- force/gradient mechanism generates an electric field to produce a fluid movement of a fluid from the source fluid flow channel to the target fluid flow channel via the porous membrane located in the cross-channel area, see paragraphs [0027], [0031]-[0033], [0060]-0064].

While Bohn does teach the use of a nanoporous membrane 22, preferably made of polycarbonate, Bohn does not specifically teach the membrane being made of a porous silicon membrane. However, Bohn states the membrane could be made of other material without departing the from the scope of the invention, see paragraph [0026].

Zimmermann teaches a microfluidic device including a measuring chamber divided into two compartments 11, 12 by a porous membrane 3. The membrane has pores 2 by way of which the compartments are connected (see Fig. 1 and paragraph [0026]). The microfluidic device of Zimmermann includes a field force/ gradient

mechanism (electrodes 4, 5) proximate the porous membrane 3 configured to produce fluid movement from compartment 11 to the other compartment 12 or *vice versa*.

Zimmermann teaches the carrier member can be formed of a membrane comprising polycarbonate or silicon nitride (see paragraph [0028]). Note the claims recite the porous membrane "comprising" porous silicon membrane. "Comprising" is a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim. Thus, porous silicon nitride membrane reads on the "porous silicon membrane".

Furthermore, like the membrane used in the instant invention, the thickness of the Zimmermann membrane is between the range of 0.5 to 30 microns, see paragraph [0028]. The system of Zimmermann also includes an optical detector in communication with data collection equipment that collects data pertaining to changes in the optical characteristic of the porous membrane (see paragraph [0029]).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention substituted the membrane of Bohn with the porous silicon membranes of Zimmermann, since Bohn teaches that the membrane may be made of other material without departing from the scope of the invention (see paragraph [0026]) and since Zimmermann teaches the equivalence of a porous silicon membrane and polycarbonate membrane.

As to claims 10 and 31, Bohn teaches fluorescence spectroscopy and imaging (light source a detector) focused at the membrane 22 see paragraph [0060].

With respect to claims 11 and 32, Bohn also teaches the membrane 22 having a thickness 46 between 1 μm and 100 μm, within the claimed range of 0.01 and 50 micrometers (see paragraph [0026]).

Regarding claims 12 and 33 Bohn teaches the porous membrane 22 is capable of fractionating molecules base on size, molecular weight, charges, chemical affinity (see for example paragraphs [0060]-[0065]).

As to claims 14, 16 and 37, Bohn teaches the substrates 24, 26 made of silicon or polydimethyl siloxane (PDMS), see paragraphs [0025], [0039].

Regarding claims 19-20 and 39-40, please note that a recitation with respect to the manner in which a claimed apparatus is intended to be employed, (i.e., disposed or reused) fails to differentiate the claimed apparatus from a prior art apparatus if the prior art apparatus teaches all the structural limitations of the claim.

As to claim 59 note that Bohn teaches array of multiple paths formed from a plurality of source and target fluid channels (see Fig. 9b and paragraphs [0023] and [0058]).

Regarding claims 65-66, Bohn does teach the porous membrane has a property of being a passive diffusion barrier (i.e., filter) between the source fluid flow channel and target fluid flow channel.

As discussed above, Bohn does teach the use of a nanoporous membrane 22 disposed between the upper and lower substrates 24, 26. Bohn does discuss the desirability of placing the nanoporous membrane between the upper and lower substrates without wrinkling or deforming the membrane and sufficiently holding the membrane in place for subsequent handling, but not so tightly as to permanently bond the membrane to the carrier (see paragraph [0042]).

Bohn do not teach the membrane being located in a hollow space formed by the first and second cavities or recessing in the upper and lower substrates. However, it would have been obvious to one ordinary skill in the art at the time of the claimed invention to form a first cavity and second cavity in the upper and lower substrate so that the membrane is located in a hollow space (recess) created by the first and second cavities in the upper and lower substrate, since the hollow cavities in the upper and lower substrates would help hold the nanoporous membrane in place for subsequent handling and prevent wrinkling or deforming the membrane.

Terminal Disclaimer

14. The terminal disclaimer filed on May 20, 2008 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US Patent No. 6,606,543 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Double Patenting

15. The provisional rejection of claims 13-14 and 34-35 on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over claims 38-39 and 41 of copending Application No.10/856,372 is held in abeyance until indication of allowance of the claims.

Response to Arguments

16. Applicant's arguments with respect to claims 1, 10-22, 31-40, 56, 61-62, 64-66 have been considered but are moot in view of the new ground(s) of rejection.

In response to Applicant argument that the polycarbonate film in Bohn's device in US Patent Pub. No. 2003/0136679 is not capable of "exhibiting sensing characteristics causing a change in at least one of an optical and electrical characteristic in response to

exposure to a targeted fluid or reaction" as recited in independent claims 1 and 22 as polycarbonate is not a semiconductor material such as silicon that can be used for electronics and photovoltaic applications. Applicant argues that to monitor the flow of the reagent molecules through the device, Bohn attaches fluorophores to the reagent molecules because polycarbonate on its own does not exhibit sensing characteristics causing a change in at least one of an optical and electrical characteristic in response to exposure to a targeted fluid or reaction.

The Examiner respectfully disagrees. As discussed above, the Bohn device includes a porous membrane 22 wherein the interior surface 60 of each pore 42 may be coated with a coating 62 (see Fig. 3), so that molecules passing through the pore are likely to contact coating. Furthermore, Bohn teaches the coating 62 may be electrically charged or metal (gold) which would cause a potential change in an optical and/or electrical characteristic of the porous membrane 20 (see paragraph [0028]). Gold is a conductor that can be used for electronics and photovoltaic applications, see for example US Patent No. 6,867,120. Thus, like the present invention, the porous membrane of Bohn is manufactured to produce a changed optical and/or electrical characteristic through the addition of a sensor layer (i.e., coating 62). Also note, that Applicant's specification teaches the addition of a sensor layer as an alternative to use of a base silicon substrate material (e.g., PSi or PPSi), see paragraph [0039] of the specification. Thus, the polycarbonate film in Bohn's device is capable of exhibiting sensing characteristics causing a change in at least one of an optical and electrical characteristic in response to exposure to a targeted fluid or reaction since polycarbonate in Bohn includes conductor material (i.e., gold) that can be used for electronics and photovoltaic applications.

Also note the stated reason for substituting the Bohn polycarbonate membrane with that of Zimmermann is that Zimmermann teaches the equivalence of a porous silicon membrane and a porous polycarbonate membrane. Furthermore, the instant claims recite the porous membrane "comprising" porous silicon membrane. "Comprising" is a term of art used in claim language which means that the named elements are essential (i.e., silicon), but other elements may be added and still form a construct within the scope of the claim. Thus, porous silicon nitride membrane reads on the "porous silicon membrane".

Thus, for the reasons delineated above, the claims remain rejected over the cited prior art.

Conclusion

17. No claims are allowed.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to P. Kathryn Wright whose telephone number is (571)272-2374. The examiner can normally be reached on Monday thru Thursday, 9 AM to 6 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. Kathryn Wright/
Examiner, Art Unit 1797